Quick Reference (extract from User Manual)

For the full User Manual please visit:

http://new.abb.com/power-converters-inverters/solar/string/single-phase/pvi-5000kw-6000kw

PVI-5000/6000-TL-OUTD (5.0 to 6.0 kW)

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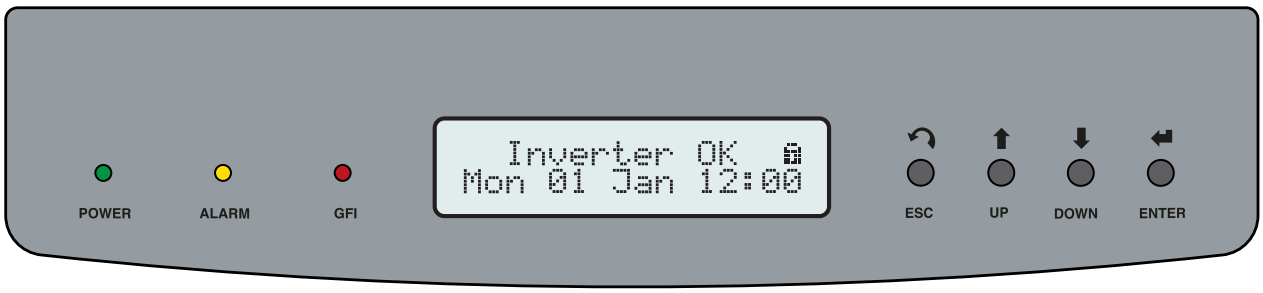
Description of keyboard and LED Panel

Using the combination of keyboard keys, under the display, it is possible to set values or scroll through the data items to view them. LED indicators are located alongside the keyboard, indicating the operating state of the inverter.



LED	Description
POWER (GREEN)	**ON** if the inverter is working correctly. **Flashes** when checking the grid or if there is insufficient sunlight.
ALARM (YELLOW)	The inverter has detected an anomaly; the anomaly is shown on the display.
GFI (RED)	Ground fault on the DC side of the PV generator; the error is shown on the display.

The LEDs, in various multiple available combinations, can signal multiple conditions other than the original single condition; see the various descriptions explained in the manual.

KEYS	Description
ESC	It is used to access the main menu, to go back to the previous menu or to go back to the previous digit to be edited.
UP	It is used to scroll up the menu options or to shift the numerical scale in ascending order.
DOWN	It is used to scroll down the menu options or to shift the numerical scale in descending order.
ENTER	It can be used to confirm an action, to access the submenu for the selected option (indicated by the **>** symbol) or to switch to the next digit to be edited. By pressing and holding the key, the cyclical display of the parameters can be: **Locked** or **Cyclical**.

The Keys, in various multiple available combinations, allow you to access actions other than the original single action; see the various descriptions explained in the manual.

LED behaviour

= LED On
= LED flashing
= LED Off
= Any one of the conditions described above

The following table shows all the possible activation combinations of LEDs on the LED panel according to the operating status of the inverter.

LED status	Operating state
green: ⊗ **yellow:** ⊗ **red:** ⊗	**Firmware programming** The inverter firmware is being programmed
green: ⊗ **yellow:** ⊗ **red:** ⊗	**Night mode (inverter automatically switches off)** The inverter is in night time switch-off mode (input voltage less than 70% of the set start-up voltage).
green: ⊗ **yellow:** ⊗ **red:** ⊗	**Inverter initialisation** This is a transitional state during verification of the operating conditions. During this stage the inverter checks that the conditions for connecting to the grid are met.
green: ● **yellow:** ⊗ **red:** ⊗	**The inverter is connected and is feeding power into the grid** Normal operation During this stage, the inverter automatically tracks and analyses the photovoltaic generator's maximum power point (MPP).
green: ⊗ **yellow:** ● **red:** ⊗	**Disconnection from the grid** Indicates no grid voltage. This condition does not allow the inverter to connect to the grid (the inverter display shows the message "Missing Grid").
green: ⊗ **yellow:** ● **red:** ⊗	**Indication of Warning (W message codes) or Error (E message codes) states** Indicates that the inverter control system has detected a warning (W) or error (E). The display shows a message indicating the type of problem found (see Alarm messages).
green: ⊗ **yellow:** ⊗ **red:** ⊗	**• Ventilation anomaly** Indicates an anomaly in the operation of the internal ventilation system that could limit output power at high ambient temperatures.
	• Failed association of internal inverter components (after replacement) Indicates that the installed wiring box (only in the event of a replacement) was already associated with another inverter and cannot be associated with the new inverter
	• Overvoltage surge arresters triggered (where fitted) Indicates that any class II overvoltage surge arresters installed on the AC or DC side have been triggered
	• String protection fuses triggered (where fitted) Indicates that one or more input string protection fuses that may be installed have been triggered
	• Autotest (for Italian grid standards only) The inverter is performing a self-test
green: ⊗ **yellow:** ⊗ **red:** ●	**Anomaly in the insulation system of the photovoltaic generator** Indicates that a leakage to ground from the FV generator has been detected, causing the inverter to disconnect from the grid.

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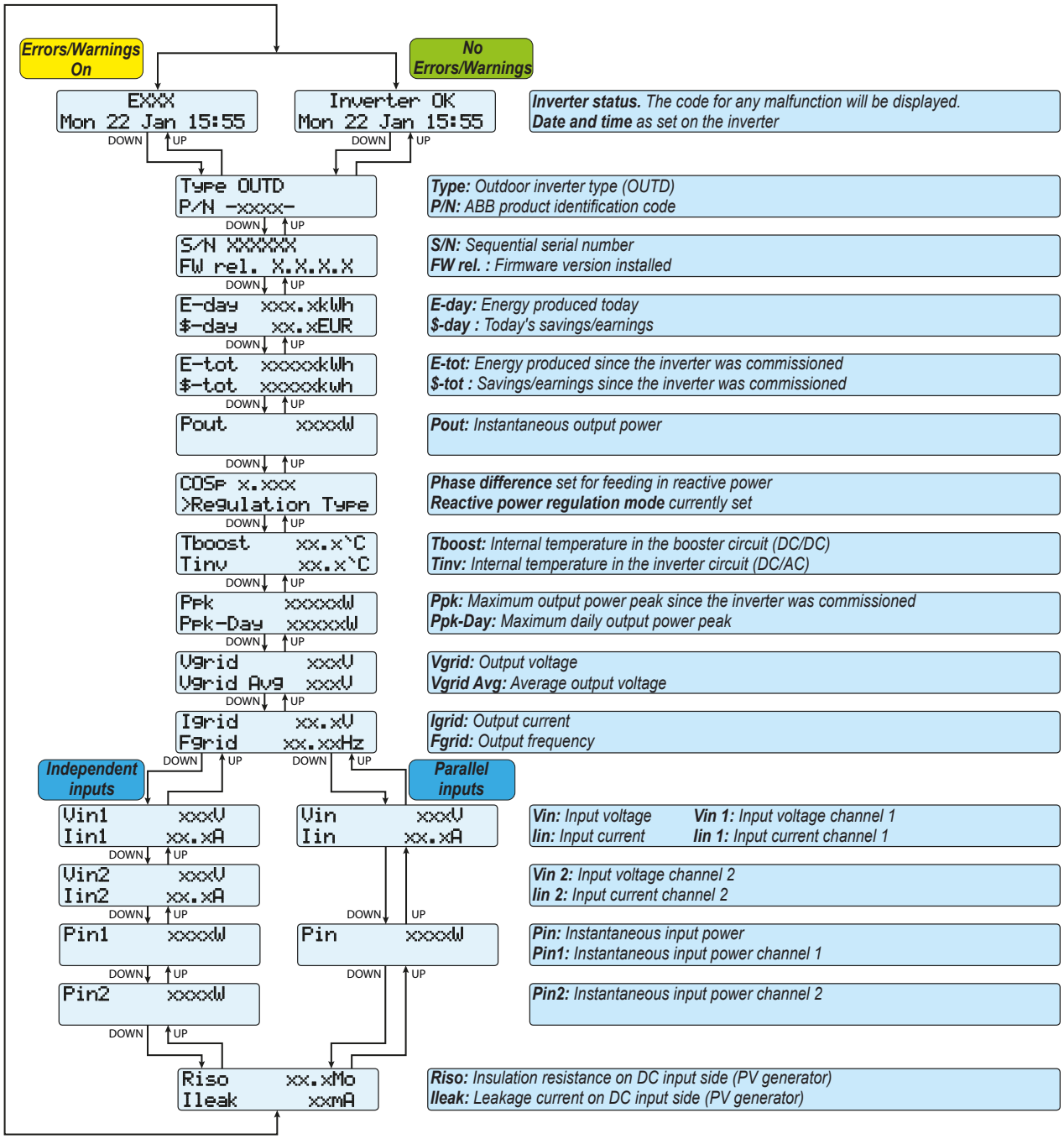
Description of the menus

The inverters are equipped with a Display (07), consisting of 2 lines of 16 characters each, which can be used to:
- Display the operating state of the inverter and the statistical data
- Display the service messages for the operator
- Display the alarm and fault messages for the operator
- Changing the settings of the inverter

General information

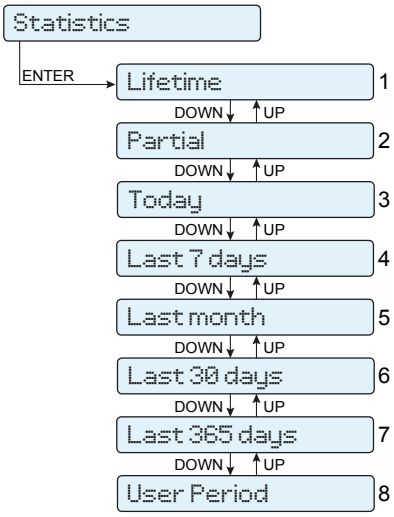
While the inverter is operating, the display shows various items of information on the main parameters measured, the operating conditions and the inverter's operating status.
The display cycles through the information when the icon is shown on the display; if the icon shown on the display is a padlock it means that the display of information is locked and the UP and DOWN buttons can be used to scroll through the screens of information instead. You can switch between the two display modes by pressing the ENTER button.

The sequence of screens displayed is shown below, with a description of the parameters monitored.


Errors/Warnings On
No Errors/Warnings
EXXX
Mon 22 Jan 15:55
Inverter OK
Mon 22 Jan 15:55
Inverter status. The code for any malfunction will be displayed.
Date and time as set on the inverter
DOWN
UP
Type OUTD
P/N -xxxx-
Type: Outdoor inverter type (OUTD)
P/N: ABB product identification code
S/N XXXXXX
FW rel. X.X.X.X
S/N: Sequential serial number
FW rel. : Firmware version installed
E-day xxx.xkWh
$-day xx.xEUR
E-day: Energy produced today
$-day : Today's savings/earnings
E-tot xxxxxkWh
$-tot xxxxxkwh
E-tot: Energy produced since the inverter was commissioned
$-tot : Savings/earnings since the inverter was commissioned
Pout xxxxW
Pout: Instantaneous output power
COSp x.xxx
>Regulation Type
Phase difference set for feeding in reactive power
Reactive power regulation mode currently set
Tboost xx.x`C
Tinv xx.x`C
Tboost: Internal temperature in the booster circuit (DC/DC)
Tinv: Internal temperature in the inverter circuit (DC/AC)
Ppk xxxxxW
Ppk-Day xxxxxW
Ppk: Maximum output power peak since the inverter was commissioned
Ppk-Day: Maximum daily output power peak
Vgrid xxxV
Vgrid Avg xxxV
Vgrid: Output voltage
Vgrid Avg: Average output voltage
Igrid xx.xV
Fgrid xx.xxHz
Igrid: Output current
Fgrid: Output frequency
Independent inputs
Parallel inputs
Vin1 xxxV
Iin1 xx.xA
Vin xxxV
Iin xx.xA
Vin: Input voltage
Iin: Input current
Vin 1: Input voltage channel 1
Iin 1: Input current channel 1
Vin2 xxxV
Iin2 xx.xA
Vin 2: Input voltage channel 2
Iin 2: Input current channel 2
Pin1 xxxxW
Pin xxxxW
Pin: Instantaneous input power
Pin1: Instantaneous input power channel 1
Pin2 xxxxW
Pin2: Instantaneous input power channel 2
Riso xx.xMo
Ileak xxmA
Riso: Insulation resistance on DC input side (PV generator)
Ileak: Leakage current on DC input side (PV generator)

Statistics Menu

Selecting STATISTICS from the three main sub-menus gives access to:



1. Lifetime

This section of the menu displays the Lifetime statistics:

- **Time:** Total operating time
- **E-tot:** Total energy produced
- **Val. :** Total production value, calculated using the currency and conversion coefficient set in the relevant section of the SETTINGS menu
- **CO_2:** Amount of CO_2 saved compared to fossil fuels

2. Partial

This section of the menu displays the Partial statistics:

- **Time:** Partial operating time
- **E-par:** Partial energy produced
- **P-Peak:** Peak power value
- **Val. :** Partial production value, calculated using the currency and conversion coefficient set in the relevant section of the SETTINGS menu
- **CO_2:** Partial amount of CO_2 saved

To reset all the counters of this sub-menu, press the ENTER button for more than 3 seconds. At the end of this time, you will hear a sound repeated 3 times.

3. Today

This section of the menu displays today's statistics:

- **E-day:** Energy produced today
- **P-Peak:** Today's peak power value
- **Val. :** Value of today's production, calculated using the currency and conversion coefficient
  set in the relevant section of the SETTINGS menu
- **CO_2:** Amount of CO_2 saved today

4. Last 7 days

This section of the menu displays the statistics for the last 7 days:

- **E-7d:** Energy produced over the last 7 days
- **Val. :** Value of production over the last 7 days, calculated using the currency and conversion coefficient set in the relevant section of the SETTINGS menu
- **CO_2:** Amount of CO_2 saved over the last 7 days

5. Last month

This section of the menu displays the statistics for the last month:

- **E-mon:** Energy produced during the current month
- **Val. :** Value of the last month's production, calculated using the currency and conversion coefficient set in the relevant section of the SETTINGS menu
- **CO_2:** Amount of CO_2 saved during the current month

6. Last 30 days

This section of the menu displays the statistics for the last 30 days:

- **E-30d:** Energy produced over the last 30 days
- **Val. :** Value of production over the last 30 days, calculated using the currency and conversion coefficient set in the relevant section of the SETTINGS menu
- **CO_2:** Amount of CO_2 saved over the last 30 days

7. Last 365 days

This section of the menu displays the statistics for the last 365 days:

- **E-365d:** Energy produced over the last 365 days
- **Val. :** Value of production over the last 365 days, calculated using the currency and conversion coefficient set in the relevant section of the SETTINGS menu
- **CO_2:** Amount of CO_2 saved over the last 365 days

8. User period

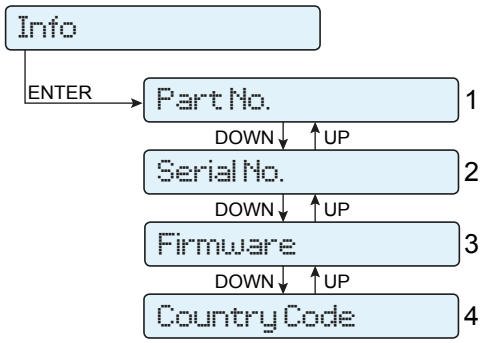
This section of the menu displays the statistics for a period chosen by the user:

Once the start and end dates for the period have been set, the following data are available:

- **E:** Energy produced over the selected period
- **Val. :** Value of production over the selected period, calculated using the currency and conversion coefficient set in the relevant section of the SETTINGS menu
- **CO_2:** Amount of CO_2 saved over the selected period

Info Menu

Selecting INFO from the three main sub-menus gives access to:



1. Part No.
Displays the model code.

2. Serial No.
Displays the serial number and week and year of manufacture of the equipment .

3. Firmware
Displays the firmware version installed in the equipment.

4. Country Code
Displays information on the grid standard set.